

**To:** Rao, Kate[Rao.kate@epa.gov]  
**Cc:** Albright, David[Albright.David@epa.gov]  
**From:** Jonathan Koplos  
**Sent:** Wed 3/1/2017 7:02:53 PM  
**Subject:** RE: Question regarding step rate testing

Thank you.

**From:** Rao, Kate [mailto:Rao.kate@epa.gov]  
**Sent:** Wednesday, March 01, 2017 1:53 PM  
**To:** Jonathan Koplos <Jonathan.Koplos@cadmusgroup.com>  
**Cc:** Albright, David <Albright.David@epa.gov>  
**Subject:** FW: Question regarding step rate testing

Jonathan. FYI. See below email from Nancy about Excelsior.

Kate

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Kate Rao  
Drinking Water Protection Section (WTR 3-2)  
USEPA Region 9  
75 Hawthorne St., San Francisco, CA 94105  
tel: (415) 972-3533 / fax: (415) 947-3549

**From:** Rumrill, Nancy  
**Sent:** Wednesday, March 01, 2017 10:40 AM  
**To:** JAMES D WALKER <jameswalker5@msn.com>  
**Cc:** Rao, Kate <Rao.kate@epa.gov>  
**Subject:** FW: Question regarding step rate testing

Hi Jim,

# Ex. 5 - Deliberative Process

Thanks, Nancy



*Nancy Rumrill ([rumrill.nancy@epa.gov](mailto:rumrill.nancy@epa.gov))*

*Drinking Water Protection Section (WTR-3-2)*

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*Phone (415) 972-3293*

**From:** Doug Bartlett [<mailto:DBartlett@clearcreekassociates.com>]

**Sent:** Wednesday, March 01, 2017 7:40 AM

**To:** Rumrill, Nancy <[Rumrill.Nancy@epa.gov](mailto:Rumrill.Nancy@epa.gov)>

**Cc:** Rebecca Sawyer <[rsawyer@excelsiormining.com](mailto:rsawyer@excelsiormining.com)>; Alison Jones <[ajones@clearcreekassociates.com](mailto:ajones@clearcreekassociates.com)>; Roland Goodgame <[rgoodgame@excelsiormining.com](mailto:rgoodgame@excelsiormining.com)>

**Subject:** Question regarding step rate testing

Nancy – in our meeting last week, you may recall we had a discussion about step rate testing to verify the fracture gradient proposed for the Gunnison project. I have attached two papers that I found online from EPA regarding the methodology for step rate testing. Are there any other papers that I should be reviewing? The step rate methodology that is described seems to match with what Excelsior did to obtain the fracture gradient value proposed in the UIC application.

Any guidance you can give me on this would be greatly appreciated!

Thank you,

Doug Bartlett

**R. Douglas Bartlett, RG, CHG**

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